

REMARKS

The Office Action dated July 13, 2004 has been received and carefully studied. Claims 1-38 are in the application. Reconsideration is respectfully requested.

Allowable Subject Matter

The applicant thanks the Examiner for the indication that claims 4-6, 11-14, 20-22 and 27-30 contain allowable subject matter. Claims 4, 5, 11, 20, 21, and 27 have been rewritten in independent form to include the subject matter of the base and any intervening claims. Claims 4-6, 11-14, 20-22 and 27-30 are therefore in condition for allowance.

Rejections in view of the Prior Art

Claims 1-3, 7-10, 15-19, 23-26, and 31-33 stand rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 5,298,835 to Muehlberger et al. in view of Patent No. 3,597,650 to Anderson et al. The Examiner contends that the '835 patent discloses a plasma generator with multiple cathodes and a common anode with a structure that includes ridges which would serve as arc attachment areas as recited in the rejected claims. The '650 patent has been cited by the Examiner for its teaching of using an anode sleeve made of a material with a high melting point, such as tungsten. Applicants respectfully disagree that the combination of references proposed by the Examiner, even if proper, renders the claims obvious.

The '835 patent, as shown in Figs. 3 and 8, discloses a plasma gun with an anode assembly 106 that has a bore along a central axis 260 and a plurality of "arc chambers" 154 extending radially outwards. Each arc chamber of the anode is a tube that extends off of the central plasma channel and receives a cathode assembly with a cathode tip 162 (shown in Fig. 3).

Although a number of different configurations for the arc chambers are shown in Fig. 11 of the ‘835 patent, having, for example different lengths, each is symmetrically arranged about the tip of the cathode without any concern as to where within the arc chamber the arc will actually attach. As a result, the attachment point of an arc between the cathode in that chamber and the anode can wander freely along the symmetric surface of the arc chamber.

Although the Examiner has referenced a “sharp protruding ridge” within the anode, it is not apparent where this feature is disclosed in the ‘835 patent. It appears Applicants assume that the Examiner is referring to the top or bottom parts of the funnel shaped portions of the disclosed arc chambers. However, these ridges are also symmetric about the tip of the cathode and so the attachment point of an arc to these ridges will also wander.

Claims 1 and 18 each recite an anode element with arc attachment points and configured so the attachment points are “substantially radially predefined”, whereby an arc to the attachment point remains substantially fixed in place in a radial direction. Advantageously, this ensures that emitted plasma plumes also remain radially stationary so that powder injection aim does not need to be changed as operating conditions vary. There is no teaching or suggestion in the ‘835 patent to provide an anode that is configured with arc attachment regions and where the attachment points are “substantially radially predefined” as recited in claims 1 and 18. To the contrary, while each cathode in the ‘835 patent has its own arc chamber that is fixed in position, the arc between the cathode in that chamber and the anode can wander freely along the symmetric surface of the arc chamber. In addition, claims 1 and 18 recite that the arc attachment regions are arranged along a surface of the central bore while the arc attachment regions in the ‘835 patent are in arc chambers that are set away from the central bore surface.

The ‘650 patent discloses a symmetric anode area wherein the arc attachment point will wander and does not cure the deficiencies in the ‘853 patent.

Accordingly, applicant submits that the rejection of claims 1 and 18 as being obvious over the ‘853 patent in view of the ‘650 patent has been traversed and should be withdrawn. Dependent claims 2,3, 7-10, 15-19, 23-26, and 31-33 are allowable for at least the same reasons.

New Claims 34-38

New claims 34-36 depend from claim 1 and new claims 37 and 38 depend from claim 18. These claims are fully supported by the specification and no new matter has been added. Entry of these claims is respectfully requested. Applicant submits that these claims also define over the ‘853 and ‘650 patents for at least the same reasons as discussed above with respect to independent claims 1 and 18.

CONCLUSION

Each and every issue raised by the Examiner has been addressed in the above amendments and remarks. Reconsideration is respectfully requested. Should the Examiner believe that direct contact with the applicant's attorney would advance the progress of this application, the Examiner is invited to telephone the undersigned at the number below.

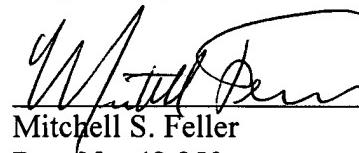
CONDITIONAL PETITION FOR EXTENSION OF TIME

If any extension of time for this response is required, applicant requests that this be considered a Petition therefore. Please charge the required Petition fee to Deposit Account No. 50-3024.

ADDITIONAL FEE

Please charge any insufficiency of fees or credit any excess to our Deposit Account No. 50-3024.

Respectfully submitted,



Mitchell S. Feller
Reg. No. 42,350

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Hogan and Hartson, L.L.P.
875 Third Avenue
New York, New York 10022
Telephone: (212) 918-3000